SECOR

SECOR
INTERNATIONAL
INCORPORATED

www.secor.com
2655 Camino Del Rio N. Suite 302
San Diego, CA 92108
619-296-6195 TEL
619-296-6199 FAX

TECHNICAL EXHIBITS FOR BP WEST COAST PRODUCTS LLC'S RESPONSE TO TENTATIVE CLEANUP AND ABATEMENT ORDER R9-2005-0126

Prepared For

BP WEST COAST PRODUCTS, LLC

BP SAN DIEGO TERMINAL (FACILITY 33T)

2295 EAST HARBOR DRIVE

SAN DIEGO, CA 92113

June 15, 2005

08BP.0033T.05

Submitted By

SECOR International, Incorporated

REGISTERED GEOLOGIST
CAROLE M. FARR
NO. 7434
EXP. 6/30/06
STATE OF CALIFORNIA

REGISTERED PROFESSIONAL ENGINEER
JUSTIN L. HAWKINS
No. 4974
Exp. 6/06
CHEMICAL
STATE OF CALIFORNIA

Prepared By

Justin L. Hawkins, PE
Principal Engineer

Reviewed By

Carole M. Farr, PG
Senior Geologist

TABLE OF CONTENTS

TABLE OF CONTENTS (Continued)

LIST OF FIGURES

LIST OF TABLES

Note: Figures and Tables appear at the end of report.

LIST OF APPENDICES

1.0 INTRODUCTION

This document has been prepared by SECOR International Incorporated, on behalf of BP West Coast Products, LLC (BP). The California Regional Water Quality Control Board-San Diego Region (RWQCB) issued Tentative Cleanup and Abatement Order (CAO) R9-2005-0126 on April 29, 2005 (Appendix A). In the Tentative CAO, eight "Dischargers" are identified that are alleged to have contributed to sediment contamination in the Southwest Marine and NASSCO shipyards located between Sampson Street and Chollas Creek along the San Diego Bay in San Diego, California (Figure 1). BP is named[1] as a discharger in the Tentative CAO due to alleged current and historical operations of the BP bulk fuel terminal (BP Terminal) located at 2295 East Harbor Drive in San Diego, California, and alleged historical pier/wharf operations in the vicinity of the Shipyard Sediment Site. For the purposes of this document, BP will serve to include BP West Coast Products, LLC and its predecessors in interest. The purpose of this document is to reiterate key findings from previous submittals to the RWQCB (SECOR, 2004) and to present additional findings to the RWQCB to support BP's position that it should not be named as a discharger in the Tentative CAO for the Shipyard Sediment Site.

The following items were cited by the RWQCB in the Tentative CAO by the RWQCB as the bases for identifying BP as a Discharger in the Tentative CAO:

1. General industry practices prior to the 1990s at bulk fuel terminals such as the BP Terminal,[2] often resulted in discharges due to leaks and spills from above ground storage tanks (ASTs) due to advanced age, design defects, human error, and equipment failure. Discharges from old fueling piers and pipelines resulted from the same factors.

2. "Available records provide evidence of specific discharges of petroleum hydrocarbon pollutants from the [BP] Terminal facility", referencing concentrations of petroleum hydrocarbons in soil and groundwater at the BP Terminal. The Tentative CAO states that, *"these pollutants may eventually migrate to San Diego Bay at the Shipyard Sediment site via various preferential pathways."*

3. Elevated levels of petroleum hydrocarbons in stormwater discharged from the BP Terminal were indicated in Annual Stormwater Monitoring reports submitted in 2003, 2004, and 2005.

A Historical Site Assessment Report (HSAR), dated July 15, 2004 (SECOR, 2004), was submitted to RWQCB as requested in Investigation Order R9-2004-0026 prior to issuance of the Tentative CAO. Historical information regarding BP Terminal operations was provided in the HSAR. Additional review of site date and historical records has been completed with respect to the four points listed above. Each of the site data and points will be addressed in the following sections. The findings of the HSAR and the supplemental information obtained since submittal of the HSAR and issuance of the Tentative CAO, and presented herein, support the position

[1] The Tentative CAO incorrectly identifies BP as the "parent and successor to Atlantic Richfield Company."
[2] The BP terminal is referred to incorrectly in the Tentative CAO as the "ARCO Terminal."

that BP Terminal operations have not contributed to the accumulation of pollutants in sediment contamination in the Shipyard Sediment Site.

Multiple lines of evidence demonstrate that BP should not be named as a discharger in the Tentative CAO including the following.

- Historical assessment and remediation data for the BP Terminal demonstrate that the soil and groundwater plumes at the BP Terminal are stable or shrinking, and do not pose a threat to San Diego Bay.

- References in the Tentative CAO to "elevated levels of petroleum hydrocarbons" in stormwater discharges apparently are based on misreading of lab data. These data will be clarified and it will be shown that the BP Terminal has remained in compliance with the General NPDES Stormwater Permit.

- The RWQCB cites "General industry practices" in naming BP as a discharger in the Tentative CAO. A review of historical construction and use data for BP operations at Pier 4 found no specific evidence to support the RWQCB finding.

Dredging activities from 1983 to the late 1980s that are reported to have occurred since Southwest Marine assumed control of Pier 4 appear to have resulted in the removal of sediments from between Pier 3 and Pier 4 well after BP ceased pier/wharf operations in 1978. This suggests that petroleum hydrocarbons in sediment near Pier 4 cited in the Tentative CAO as support for naming BP as a Discharger are most likely the result of recent releases or other sources.

2.0 SUBSURFACE IMPACT AT BP TERMINAL

2.1 Site Assessment/Remediation Summary

A detailed summary of the site assessment and remediation history is provided in the HSAR (SECOR, 2004) and other historical reports prepared for the BP Terminal. Subsurface environmental assessment and remediation activities have been ongoing at the BP Terminal since 1992 under the oversight of the County of San Diego, Department of Environmental Health, Land and Water Quality Division, Site Assessment and Mitigation Program. Petroleum hydrocarbon impact was first discovered in soil samples collected in 1992 during underground storage tank removal activities. A total of 31 groundwater monitoring wells have been installed at the BP Terminal at locations on-site and off-site. Groundwater is encountered at approximately 19 to 20 feet below ground surface. Ongoing groundwater monitoring is performed on a quarterly basis and groundwater sampling is performed annually. Weekly operation and maintenance the remediation systems is also performed.

A summary of the site assessment and remediation information is presented in the HSAR (SECOR, 2004). Concentration trends in key wells and historical groundwater plume maps are evaluated in section 2.2 and 2.3 below.

2.2 Evaluation of Data for Select Downgradient Indicator Wells

Two key groundwater monitoring wells are located between the BP Terminal and the Bay. An evaluation of monitoring data for these wells shows that the soil and groundwater impacts associated with the BP Terminal are stable or shrinking and have not migrated to the Bay.

2.2.1 Former Chevron Tank Farm Well C-6

Former Chevron monitoring well C-6 was located at the northeast corner of the former Chevron Lower Tank Farm #2, approximately 250 feet southwest of the BP Terminal (Figure 2). Well C-6 was located downgradient of the BP Terminal and directly between the terminal and the Bay.

Former well C-6 was installed in 1987 and was used to assess and monitor groundwater conditions at Chevron's Former Lower Tank Farm #2 from 1987 until June 2001, when the Tank Farm was decommissioned and the well was destroyed. Chevron's quarterly monitoring data for C-6 (Appendix B, Tables 2 and 3) shows that LPH was never measured in well C-6 and that concentrations of dissolved total petroleum hydrocarbons as gasoline (TPHg), TPH as diesel (TPHd) and benzene were not detected during the entire monitoring history (1987 to 2001) except as noted below:

- During the March 12, 1990 sampling event a TPHg concentration of 10 micrograms per liter (µg/L) was reported for well C-6.
- During the November 15, 1996 sampling event a benzene concentration of 2.1 µg/L was reported for well C-6.

Similar data trends are observed for other former wells that were located at Chevron's Lower Tank Farm #2 (former Chevron wells C-3, C-4 and C-5). If historical subsurface soil and groundwater impacts from the BP Terminal had contributed to sediment contamination at the Shipyard Sediment Site petroleum hydrocarbons should have been reported in well C-6. The absence of reported TPHg, TPHd, and benzene concentrations reported in C-6 does indicates that soil and groundwater impacts at the BP Terminal have not migrated to the former Chevron Lower Tank Farm #2 location, and therefore, have not migrated to the Bay.

2.2.2 BP Well MW-31

BP monitoring well MW-31 is located in Belt Street approximately 240 feet southwest of the BP Terminal (Figure 2). This location places the well downgradient of the BP Terminal and directly between the terminal and the Bay.

Well MW-31 was installed in 1996 to define the downgradient extent of subsurface petroleum hydrocarbon impacts downgradient of the BP Terminal. Quarterly groundwater monitoring data for this well from 1996 through 2004 (Tables 1 and 2) shows that LPH has never been observed and that dissolved TPHg, TPHd and benzene concentrations have not been detected during the entire monitoring history (1996 through 2004) except as noted below:

- During the December 5, 2002 sampling event the well was reported to contain TPHg at a concentration of 86,000 micrograms µg/L. Previous and subsequent groundwater analytical results from well MW-31 have been below laboratory reporting limits for petroleum hydrocarbon analytes.

2.3 Evaluation of Historical Floating Product/Dissolved TPH Plume Maps

SECOR created LPH/dissolved TPH plume maps for the Terminal for December 1998, December 2001 and December 2004 using combined data from the BP Terminal and adjacent Chevron Terminal, which are presented as Figures 4, 5 and 6. The resulting plumes were then super-imposed on an aerial photograph base map as Figures 7, 8 and 9 to better illustrate the position of the LPH and dissolved hydrocarbon plumes relative to the Shipyard Sediment Site and the Bay. These maps show that the plume is localized to the general vicinity of the BP Terminal, is shrinking in size, and therefore does not pose a threat to the Bay. These data demonstrate that subsurface plume migration from the BP Terminal is and was not a pathway for petroleum hydrocarbons associated with the BP Terminal to impact sediments at the Shipyard Sediment Site.

2.4 Evaluation of Subsurface Preferential Flowpaths

In this section SECOR has performed an evaluation of potential subsurface preferential flowpaths that takes into consideration subsurface geology and hydrogeology, utility trench locations, and other potential anthropogenic factors such as fill material.

2.4.1 Geology and Hydrogeology

The BP Terminal lies approximately 750 feet inland from the San Diego Bay on a relatively flat marine terrace. The average site elevation is approximately 20 feet above mean sea level. The site is underlain by up to 3 feet of fill material and then by sediments of the Quaternary Bay Point Formation. Silty clay, clayey silt and thick interbedded sequences of fossiliferous silty sand are present to approximately 30 feet below ground surface (bgs) the total depth drilled at the BP Terminal (SECOR, 2004).

SECOR reviewed the geologic boring logs for all on- and off-site wells and soil borings advanced during the assessment of the BP Terminal. This includes well MW-31 and soil borings SP-1 through SP-10 that were installed along Belt Street (Figure 2), which is downgradient from the BP Terminal and located between the Terminal and the Bay. For the borings in or near Belt Street, the dominant soil type was sand with varying amounts of silt, clay and coarser material to a depth of approximately 12 to 15 feet bgs. Booth (2005) and others have referenced historical documents that indicated that the area between the BP terminal and the Shipyard Sediment Site was in filled in the 1930s with dredged material from San Diego Bay. SECOR's evaluation of these boring logs did not reveal any geologic zones that would serve as a preferential flow path from the BP Terminal to the Bay. Geologic cross sections and select boring logs are included as Appendix C.

In the vicinity of the BP Terminal predominant soil types encountered included finer grained material such as clay, silty clay, silty sand, clayey sand, and clayey and sandy silt. Groundwater is gauged in monitoring wells at the BP Terminal at 19 to 20 feet bgs. The groundwater flow beneath the BP Terminal is to the west and flows with a gradient of 0.0005 to 0.0008 (SECOR, 2005). Additionally, a tidal influence study performed by SECOR in 1996 did not identify a connection between tidal fluctuations in the Bay and groundwater elevations at the BP terminal, providing further evidence that there are no preferential flow paths from the BP Terminal to the Bay.

2.4.2 Subsurface Utilities

In the vicinity of the BP Terminal depth to groundwater is typically 19 to 20 feet below ground surface. For wells located in and near Belt Street (BP well MW-31 and former Chevron well C-6) depth to groundwater is typically 10 to 11 feet below ground surface. Depth to groundwater in the vicinity of the BP Terminal is deeper than the normal depths associated with subsurface utilities such as water, sewer, power, communications, fuel pipelines, storm drains, etc. Therefore, it is unlikely that subsurface utilities in the vicinity of the BP Terminal have provided a flowpath for petroleum hydrocarbon migration from the terminal.

3.0 STORM WATER AND WASTEWATER MANAGEMENT

The BP Terminal is subject to industrial stormwater monitoring regulations in accordance with the Clean Water Act (1972) pursuant to Title 40 of the Code of Federal Regulations, Section 122.26(b)(14) (40 CFR 122.26) as administered by the RWQCB. Additionally, a permit from the City of San Diego for discharge of industrial wastewater to the City of San Diego sewer system is maintained for the BP Terminal.

The following sections will discuss specific references made by RWQCB with respect to stormwater discharges.

3.1 2003, 2004 and 2005 Annual Stormwater Monitoring Reporting

In the tentative Order, the RWQCB stated that elevated levels of benzene, and oil and grease were reported in 2003, 2004 and 2005 in annual stormwater reports. A review of these annual reports by SECOR determined that this was not correct.

3.1.1 Review of Annual Stormwater Reports

A review of the 2002-03, and 2003-04 Annual Stormwater reports revealed that none of the samples collected during those monitoring periods exceeded laboratory reporting limits for any of the analytes. SECOR personnel contacted RWQCB and requested the data that the RWQCB relied upon in making its finding that elevated concentrations were encountered. The RWQCB findings were based on data presented in the annual stormwater monitoring reports for the BP Terminal. Specifically, several analytes including pH, total suspended solids (TSS), specific conductance, total organic carbon, oil and grease, benzene, toluene and ethylbenzene, and their respective parameter benchmark values (PBV) from the Federal Register Volume 65, No. 210 (October 30, 2000) and the California Toxics Rule (CTR) limits were referenced by RWQCB. Upon further discussion with RWQCB staff, SECOR discovered that the data referenced in the Tentative CAO was from the laboratory control spike sample result (LCS), an internal laboratory quality control spike, and not from the actual sample result. A correct reading of the laboratory results makes clear that there were no exceedances reported.

The annual report for the 2004-05 reporting period is not due to be submitted to the RWQCB until the completion of the monitoring period in June 2005, which post dates the Tentative CAO. SECOR has reviewed stormwater sampling data collected in the 2004-05 monitoring period with the BP Terminal manager. Laboratory analytical results for benzene, toluene, ethylbenzene and oil and grease were below the laboratory reporting limits for those analytes in a stormwater sample collected on October 21, 2004. Based on this information, the elevated levels of benzene, and oil and grease for 2005 referenced by RWQCB in the Tentative CAO appear to be erroneous. SECOR has attached a copy of the lab report for the stormwater sample from October 2004 (Appendix D). The annual stormwater report for the 2004-05 monitoring period will be submitted to RWQCB under a separate cover in accordance with the requirements of General NPDES Permit # CAS000001.

Based on the information above, and a review of available permit records, stormwater samples from the BP Terminal have been in compliance with applicable permit requirements and have not exceeded PBVs or CTR limits for 2003, 2004 or 2005.

3.1.2 Stormwater Pollution Prevention Plan

Pursuant to applicable sections of the Federal Clean Water Act as amended in 1972 and 1987, industrial stormwater discharges are regulated under National Pollutant Discharge Elimination System (NPDES) permits. In November, 1990, the U.S. Environmental Protection Agency published final regulations that established application requirements for stormwater permits. The California Water Resources Control Board adopted General NPDES Permit #CAS000001 in November 1991 for discharges of stormwater associated with industrial activities. Industrial operations covered by the general permit included Petroleum Bulk Stations and Terminals (Standard Industrial Code (SIC) #5171). A Notice of Intent (NOI) was submitted to the RWQCB on March 26, 1992. Annual reports have been submitted to the RWQCB since the 1992-93 monitoring period. The RWQCB issued Order 97-03-DWQ which replaced Order #91-03 to and amended General Permit #CAS000001. An NOI for the updated permit was submitted by the BP Terminal on June 10, 1997.

In accordance with the General NPDES permit, a Stormwater Pollution Prevention Plan (SWPPP) was prepared for the BP Terminal. The SWPPP details best management practices (BMPs) that will be used to mitigate impact to stormwater from BP Terminal operations. The SWPPP was initially prepared in 1992 when coverage under General NPDES Permit #CAS000001 was first required, and is reviewed annually and updated as necessary.

In conjunction with the SWPPP, the BP Terminal maintains a Spill Prevention, Control and Countermeasures (SPCC) Plan in accordance with 40 CFR 112, "Oil Pollution Prevention". Requirements for SPCCs went into effect in January 1974 and a SPCC Plan for the BP Terminal has been maintained since then. The SPCC Plan is subject to an internal annual review and must be reviewed and certified every 5 years. If it is determined that the plan must be revised to incorporate new, more effective control technology, or if changes in facility design, construction, operation or maintenance occur, the plan must revised within 6 months of the changes and certified by a professional engineer.

The current SPCC (dated February 15, 2005) calls for stormwater that accumulates in the sump in the southwestern corner of the terminal property to be evaluated prior to release in accordance with the general NPDES permit and/or for visual evidence of sheen or floating product. If the stormwater is determined to be contaminated, the water is to be transferred to an on-site holding tank (Tank No. 6) or transferred directly into a vacuum truck for off-site treatment and/or disposal. General runoff from the truck loading racks and pumpback station are collected by the wastewater drainage system into a 1,700 gallon transfer sump and then transferred to Tank No. 9. Once a sufficient volume has accumulated, the water is discharged through the oil/water separator and pretreatment system to the sanitary sewer. Discharge to the sanitary sewer is permitted separately from the NPDES general permit, as described in the following section.

3.2 Wastewater Management

Wastewater from the BP Terminal is discharged to a City of San Diego sewerage under an Industrial User's Discharge Permit #11-0284. This permit has been in affect with various amendments since 1989. Discharges of wastewater from area washdown, truck washing, draw-off of water in storage tanks and contaminated rainwater are permitted for discharge to a City of San Diego sanitary sewer (Connection #100). The current permit allows for discharge of up to 300 gallons of wastewater per day to the sewer.

Under the permit, semi-annual reporting is required and must include analysis of oil and grease, and flashpoint. Periodic samples are also collected by Industrial Wastewater Control Program personnel. Wastewater is pretreated prior to discharge to the sanitary sewer by processing the water through a three-stage treatment consisting of oil/water separation air stripping and activated carbon polishing.

3.3 Conclusions

Based on the available information provided in the preceding sections with respect to stormwater and wastewater management at the BP terminal the following support that stormwater discharges from the BP terminal have not contributed to accumulation of petroleum hydrocarbons in the Bay or the Shipyard Sediment site.

- The elevated levels of petroleum hydrocarbons referenced in the Tentative CAO were incorrect. A review of the 2003, 2004 and 2005 annual stormwater data for the BP Terminal revealed that stormwater samples collected did not contain elevated levels of oil and grease, benzene, toluene, or ethylbenzene.

- Stormwater has been managed under a General NPDES permit since 1992 in accordance with applicable requirements. An SWPPP is also maintained in accordance with the General NPDES permit # CAS000001.

- Based on a review of available records, wastewater is discharged to a City of San Diego sanitary sewer under an Industrial Users Discharge Permit since 1989. Wastewater discharged to the sewer is pretreated prior to discharge. The records indicated that wastewater discharges have been and remain in compliance with the Industrial Users permit.

- A review of the SPCC and SWPP Plans revealed that stormwater or runoff that contains elevated levels of petroleum hydrocarbons or LPH is collected in a sump at the southwest corner of the BP terminal. Contaminated stormwater or runoff (as determined by laboratory analysis and/or visual observations) is transferred to on-site holding tanks where it is either pretreated prior to discharge to the sanitary sewer, or removed by vacuum truck and transported off-site for disposal or reprocessing at the BP refinery in Los Angeles.

The practices described above reflect current practices that are not only in compliance with applicable permits requirements and regulations but serve to mitigate potential discharges

from the BP terminal that could threaten the Bay or cause accumulation of petroleum hydrocarbons in the Shipyard Sediment site.

4.0 INDUSTRY-WIDE OPERATIONAL PRACTICES

The RWQCB, in naming BP in the Tentative CAO, indicated the following evidence in regards to BP operations at Pier 4:

1. *"ARCO owned and operated ancillary facilities including a wharf, fuel pier (currently Southwest Marine Pier 4), and a marine fueling station used for loading and unloading petroleum products from 1925 to 1978, and five pipelines connecting the terminal to the pier and wharf from 1925 to 1978."*

2. *"Industry-wide operational practices, especially in the years prior to the State of California's passage of the Aboveground Petroleum Storage Act in 1990, often led to discharges from aboveground storage tank facilities such as the BP Terminal due to leaks and spills from tanks due to advanced age, defects in design or installation, human error, and equipment failure. Similarly old fueling piers and pipelines were often the sources of releases and leaks due to the same factors."*

The above reasons cited in the Tentative CAO for naming BP as a responsible party are insufficient. Citing industry-wide operational practices in the absence of evidence of specific events or data that show spills or leaks occurred from the former pier lacks technical merit. With out specific events or data, historical pier operations cannot be concluded to have contributed to the accumulation of pollutants in the marine sediments at the Shipyard Sediments Site.

In BP's response to RWQCB Investigation Order R9-2004-0026 (SECOR – 2004), a review of historical construction and use documents for the pier and connecting pipelines found no evidence of spills and/or leaks. A second review of historical construction and use documents for the pier and connecting pipelines by the Port of San Diego (Booth – 2005), also in response to Investigation Order R9-2004-0026, similarly discovered no evidence of leaks or spills from the pier and or connecting pipelines that would have contributed to the accumulation of pollutants in the marine sediments. Specific Pier 4 historical construction and use findings that support this position are summarized in the following sections.

4.1 Pier 4 Description and History

The original bulk fuel terminal, pier and connecting pipelines were originally constructed from approximately 1925 to 1928 by the Pan American Oil Company. The fuel terminal was located at the southwest corner of Sicard Street and Harbor Drive (formerly Colton Avenue). According to 1928 plans (Appendix E), the pier was approximately 700 feet long and included three product pipes, one water pipe and one electrical conduit. These pipelines ran along the pier, then passed under the Atchison, Topeka & Santa Fe (AT&SF) railway before entering the BP Terminal (Appendix E). The pier and pipelines were used to unload petroleum products from barges supplying the terminal and to fuel ships.

In the 1930s, the City of San Diego used dredged Bay sediments to expand the shoreline from what is now approximately Belt Street to the current configuration. This effectively expanded the distance between the BP terminal and the Bay to approximately 750 feet.

In the 1960s, the San Diego Pipeline Company (now Kinder-Morgan) Pipeline was installed along the railroad tracks that parallel Belt Street to the south of the BP Terminal. The Kinder-Morgan Pipeline, still in use today, supplied petroleum products to the BP Terminal. Once connected to this pipeline, Pier 4 and the associated connecting pipelines were no longer used for receipt of petroleum products. BP continued to use Pier 4 as marine fueling facility continued until 1978.

Correspondence and plans from BP to the Port of San Diego in 1968 and 1970 indicate that in 1969 Pier 4 and all associated piping were completely rebuilt (Booth, 2005). Copies of the correspondence and plans are included in Appendix E. Based on the plans and later correspondence, it appears that the rebuilt pier and piping are still in place and in use by Southwest Marine. These correspondence in 1969 and 1970 are important in that they show that the Pier 4 and all associated piping (product, water and electrical) were new at the time and would therefore, presumably would be less likely to be a source of petroleum spills and/or leaks to the Bay.

In 1978 all operations and use of Pier 4 by BP ceased, although the lease was still in effect. This is the last use of the pier and connecting pipelines by BP for transportation of petroleum products. In 1982 BP terminated the lease for the Pier and transferred the lease to Southwest Marine. However, BP maintained the lease for the pipeline easement as a contingency for potential emergency fuel supply needs in the future. In 1983, one or more of the pipelines was used to transfer Bay sea water from the Bay to the BP Terminal tank farm for hydrotesting. This is the last known use of the pipeline for any purpose by BP.

4.2 Current Pipeline Status

An inspection of Pier 4 by SECOR in 2004 revealed a raised concrete valve box at the based on Pier 4 (Figure 3). Six steel pipes varying from four to eight inches in diameter entered the valve box from the inland side. Two of the pipes entering the box were blind-flanged. The other four pipes left the valve box and were observed to run under the concrete pier and appeared to terminate half way down the pier. The pipes all appeared to be in good condition. Three of these pipes were in use by Southwest Marine for compressed air, potable water, and discharge to the sewer. The end of the fourth pipe could not be found. The inland portion of the pipeline run is below ground at a depth of approximately two to three feet below ground surface. This inspection revealed that the pier and piping, in place since 1969, were in good condition and did not show any indication of historical damage or leaks.

4.3 Conclusions

Based on the absence of specific evidence of historical discharges from the former BP operations at Pier 4, and the more than 25 years than have passed since BP last conducted petroleum related operations at the pier, a definite link cannot be demonstrated between discharges from historical BP operations and impact to sediments at the Shipyard Site. Therefore, "*industry-wide operational practices*" and the fact that the pier and associated pipelines were at one time associated with the BP Terminal are not sufficient to name BP as a discharger in the Tentative CAO.

5.0 PREVIOUS DREDGING NEAR PIER 4/SOUTHWEST MARINE LEASEHOLD

In addition to reviewing historical data and records for the BP Terminal, available records pertaining to dredging and improvements in the vicinity of the Southwest Marine Pier 4 were also reviewed by SECOR. Records pertaining to dredging have not been readily available and as new information becomes available additional information will be supplied as it pertains to contribution and accumulation of petroleum hydrocarbons in the Shipyard Sediment site and the Bay.

5.1 Dredging Records Review

In November 1982, the Army Corp of Engineers issued a "Public Notice of Application for Permit" for dredging, transporting and disposing of sediment from the Southwest Marine Shipyard associated with improvements to the existing shipyard facility. The public notice is included in Appendix F (includes map and cross sections). The application was for dredging approximately 410,000 cubic yards (cy) of sediment from the shipyard. An estimated 103,000 cy was proposed to be removed from between and adjacent to the original Pier 2 location and the new Pier 3 location. The proposed dredging area included approximately 1,000 cy of sediments between the new Pier 3 location and Pier 4 (U.S.A.C.E, 1982).

In 1983, Southwest Marine submitted plans for shipyard modernization to the San Diego Unified Port District, the Army Corps of Engineers, and the RWQCB for review. These plans included a proposal to dredge up to 410,000 cubic yards of sediment from the Southwest Marine Shipyard, to remove and reconstruct Pier 3, and to construct a 22,000 ton floating dry dock. According to the plans, the improvements would occur beginning in 1984 and continue into the late 1980s (Pacific Developments, 1988).

The plans called for reconstructing Pier 3 further south of the original location. This would require sediment to be removed from between Piers 2 and the new Pier 3, and south of new Pier 3 and Pier 4 . A floating drydock was located south of Pier 4.

Based on the planned dredging and the current configuration of the Southwest Marine leasehold, much of the sediment to the north and south of Pier 4 appears to have been dredged to accommodate modernization of the Southwest Marine Shipyard (Pacific Developments, 1988).

5.2 Historical Sediment Sampling

Multiple sediment sampling events have been performed within the Southwest Marine Shipyard. In the HSAR (SECOR, 2004), a review of sediment data and prepared by Exponent (2003) on behalf of Southwest Marine, was evaluated as it pertained to the area between Piers 3 and 4 and adjacent to Pier 4. Sediment data between Piers 3 and 4 (specifically, stations SW20 through SW24) generally showed decreasing concentrations of PAHs with depth. This suggests that the PAH deposition was predominantly from recent deposition (SECOR, 2004).

Additionally, the ratios of alkylated PAHs to parent PAHs that were identified in the area between Piers 3 and 4 were indicative of pyrogenic sources of hydrocarbons rather than

petrogenic sources of hydrocarbons. Pyrogenic PAHs are related to incomplete combustion of petroleum hydrocarbons such as those that can typically be found in urban runoff. Impact from pier fueling operations and petroleum product distribution activities would be associated with petrogenic PAHs (i.e. from weathered product). Based on the sediment data evaluation presented in the HSAR, and consistent with the analysis presented by Exponent (2003), PAH distributions in sediment samples collected from between Piers 3 and 4 are representative of a source such as urban runoff and recent deposition (SECOR, 2004). A more detailed discussion of sediment data is provided in the HSAR.

5.3 Discussion

Based on a review of available dredging information and historical sediment data, the following statements can be made:

- Plans for dredging in the vicinity of Piers 3 and 4 were submitted by Southwest Marine to the USACE and others subsequent to assuming control of Pier 4. The plans included dredging a portion of the sediments from between Piers 3 and 4 as part of a Shipyard Modernization project.

- Records indicate that all or a portion of the sediments between Piers 3 and 4 were removed during reconstruction of Pier 3. A floating dry dock has been located on the south side of Pier 4 for the majority of the time that Southwest Marine has leased the pier.

- Sediment sampling profiles indicating that petroleum hydrocarbon concentrations decrease with depth and the pyrogenic nature of PAHs in the sediments coupled with the historical dredging records indicate that the PAHs are consistent with recent deposition and not from fueling operations that ceased over 25 years ago.

6.0 CONCLUSIONS

Based on the findings originally presented in SECOR's 2004 report to the RWQCB, and the supplemental information present in this document, BP should not be named as a discharger in Tentative CAO R9-2005-0126 for the Shipyard Sediment Site. Main conclusions supporting this position are presented below.

- An evaluation of historical soil and groundwater site assessment and monitoring data for the BP Terminal shows that the petroleum hydrocarbon impact related to the BP Terminal is well defined, stable and shrinking in size, limited to the BP Terminal site or within close proximity to it, and not migrating towards the Bay.

- Site assessment, monitoring and remediation activities have been in progress at the BP Terminal since 1992 under the oversight of the County of San Diego.

- A review of site geology, hydrogeology and subsurface utilities near the BP Terminal found no likely preferential flowpaths towards the Bay.

- Stormwater monitoring data shows that the stormwater discharged from the BP Terminal to the municipal stormdrain system has not contained elevated levels of petroleum hydrocarbons as alleged by the RWQCB in the Tentative CAO.

- Recent (1980s) dredging near Pier 4 would have removed a significant amount of historical sediments from this area. This suggests that some of the petroleum hydrocarbons (including PAHs) reported during Exponent's assessments in 2001 and 2002 are recent in nature and can not be attributed to historical operations at Pier 4 by BP.

7.0 REFERENCES

Atlantic Richfield Internal Documents provided by Mr. Roy Thun.

Atlantic Richfield historical Maps

Board of Engineers for Rivers and Harbors, *Port Facilities at San Diego California Map*, 1946.

Booth, Susan E. June 30, 2004, *Historical Study, San Diego Bay Waterfront, Sampson Street to 28th Street, San Diego, CA.*

California Regional Water Quality Control Board (CRWQCB), San Diego, 1994 "*Comprehensive Water Quality Control Plan Report*", San Diego Basin (9).

CRWQCB, 1987, *Underground Tank Facility List.*

CRWQCB, February 19, 2004, *Investigation Order No. R9-2004-0026..*

CRWQCB, April 29, 2005, Tentative Cleanup and Abatement Order *No. R9-2005-0126.*

City of San Diego Main Library, California Room, Haines and Polks City Directories. *SECOR* reviewed available Polks and Haines reverse city directories in the California

City of San Diego, Development Services, Maps and Records Department, May 25, 2004.

County of San Diego Operation Center, Ruffin Road Annex, Aerial Photograph Collection. The following photographs of the subject property and surrounding areas were examined:

1. Photograph SDCO 66D-6, Dated 1928; Approximate Scale 1:2,000
2. Photograph AXN-1F-103 and 2F-3, Dated 2-16-1945
3. Photograph AXN-3M-1997, Dated 3-31-1953
4. Photograph GS-VB01 1-120&121, Dated 11-2-1966; Approximate Scale 1:2,000
5. Photograph SDCO 7-5, Dated 10-9-1970; Approximate Scale 1: 2,000
6. Photograph SDPD 25-16, Dated 12-20-1973;
7. Photograph SDCO 210-23B-34, Dated 11-27-1978; Approximate Scale 1:2,000
8. Photograph C11109 650, Dated 11-26-1983; Approximate Scale 1:2,000
9. Photograph WAC-89 CA 34-181, Dated 4-4-1989; Approximate Scale 1:2,000

County of San Diego Tax Assessor's Office.

EDR, Sanborn Fire Insurance Maps, dated 1921, 1950, 1956, 1959, 1960, 1962, 1965, 1970 and 1971.

Exponent. 2003. NASSCO and Southwest Marine Detailed Sediment Investigation, Prepared for NASSCO and Southwest Marine, San Diego, CA. Exponent, Bellevue, WA.October 10, 2003.

Exponent. 2001. Work plan for the NASSCO and Southwest Marine detailed sediment investigation. Prepared for NASSCO and Southwest Marine, San Diego, CA. Exponent, Bellevue, WA.

Kennedy, M.P., 1975, "*Geology of the San Diego Metropolitan Area, California*", Section A, California Division of Mines and Geology, Bulletin 200, Sacramento, California.

LFR, July 15, 2004, Chevron San Diego Terminal, Technical Report in Response to R9-2004-0026.

LFR April 30, 2005, Chervon San Diego Terminal, 1Q05 Groundwater Monitoring and Status Report.

Pereira, W.E., Hostettler, F.D., Louma, S.N., van Green, A., Fuller, C.C., and R.J. Anima, 1999. Sedimentary record of anthropoengic and biogenic polycyclic aromatic hydrocarbons in San Francisco Bay, California. Mar. Chem., **64**:99-113.

San Diego Port Authority GIS Maps, June 23, 2004

Stout, S.A., Uhler, A.D., McCarthy, K.J., and S. Emsbo-Mattingly (2002) Chemical fingerprinting of hydrocarbons. In: Introduction to Environmental Forensics (Eds. Murphy, B.L. and R.D. Morrison). Academic Press, San Diego. pp. 137-260.

SEACOR, June 26, 1992, "*Preliminary Tank Replacement Assessment Report, ARCO Bulk Terminal #33T.*"

SEACOR, October 8, 1992, "*In-Situ Stockpile Characterization Report, Part I and Part II, ARCO Bulk Terminal #33T.*"

SEACOR, November 25, 1992, "*Tank Removal Report, ARCO Bulk Terminal #33T.*"

SEACOR, September 20, 1993, "*Site Assessment Report, ARCO Bulk Terminal #33T.*"

SEACOR, April 7, 1994, "*Additional Site Assessment Report, ARCO Bulk Terminal #33T.*"

SEACOR, August 7, 1995, "*Additional Site Assessment Report, ARCO Bulk Terminal #33T.*"

SECOR, September 20, 1996, "*Additional Site Assessment Report, ARCO Bulk Terminal #33T.*"

SECOR, November 11, 1996, "*Corrective Action Plan and Community Health and Safety Plan, ARCO Facility #33T.*"

SECOR, May 13, 1999, "*Additional Site Assessment Report, ARCO Bulk Terminal #33T.*"

SECOR, May 13, 1999, "*Additional Site Assessment Report, ARCO Bulk Terminal #33T.*"

SECOR, May 17, 1999, "*Results of Kinder Morgan Spill and Site Assessment, ARCO Facility #33T.*"

SECOR, December 1, 2000, "*Site Remedial Action Workplan, ARCO Facility #33T.*"

SECOR, June 15, 2001, "*Site Assessment Report, Belt Street/ARCO Facility #33T.*"

SECOR, April 23, 2003, "*ARCO Quarterly Groundwater Remediation Report," Fourth Quarter 2002.*"

SECOR, July 15, 2004, "Historical Site Assessment *Report, Atlantic Richfield Facility No. 33-T*""

SWRCB. 1989. Leaking underground fuel tank field manual: Guidelines for site assessment, cleanup, and underground storage tank closure. California Environmental Protection Agency, State Water Resources Control Board.

U.S. Geological Survey, Point Loma, California, 7.5-Minute Topographic Quadrangle, 1967, Photorevised 1975.

Van Metre, P.C., Mahler, B.J., and E.T. Furlong, 2000. Urban sprawl leaves its PAH signature. Environ. Sci. Technol., **34**:4064-4070.

Woodward and Clyde, Historical Occupancy Search Southwest Marine Foot of Sampson Street, San Diego California.

Interviews:

Mr. Michael Burke, Terminal Manager, Atlantic Richfield Facility 33T.

TABLE 1

SUMMARY OF STATIC WATER LEVEL ELEVATIONS, 1998 to PRESENT
BP BULK TERMINAL #33T

Well I.D.	Date Measured	Measured DTW (Ft)	Measured LPH Thickness (Ft)	Corrected LPH Thickness (Ft)[1]	Adjusted DTW (Ft)[2]	Top of Casing Elevation (AMSL)	Water Elevation (Ft AMSL)[3]
MW-6	03/06/98	20.02	0.12	0.09	19.95	22.20	2.25
	06/05/98	20.67	0.15	0.11	20.56	22.20	1.64
	09/04/98	20.47	0.01	0.01	20.46	22.20	1.74
	12/03/98	20.80	0.11	0.08	20.72	22.28	1.56
	03/04/99	21.04	NP	NP	21.04	22.28	1.24
	06/03/99	20.75	NP	NP	20.75	22.28	1.53
	09/30/99	21.80	1.11	0.83	20.97	22.28	1.31
	12/23/99	21.81	0.89	0.67	21.14	22.28	1.14
	03/22/00	21.97	1.24	0.93	21.04	22.28	1.24
	06/26/00	21.06	0.16	0.12	20.94	22.28	1.34
	09/28/00	20.77	NP	NP	20.77	22.28	1.51
	12/28/00	21.07	NP	NP	21.07	22.28	1.21
	03/28/01	20.79	NP	NP	20.79	22.28	1.49
	06/28/01	20.86	0.01	0.01	20.85	22.28	1.43
	09/27/01	20.70	NP	NP	20.70	22.28	1.58
	12/27/01	20.88	NP	NP	20.88	22.28	1.40
	03/27/02	20.95	NP	NP	20.95	22.28	1.33
	06/26/02	20.84	NP	NP	20.84	22.28	1.44
	09/16/02	20.42	NP	NP	20.42	24.42*	4.00
	12/04/02	20.28	NP	NP	20.28	24.42	4.14
	02/05/03	20.22	NP	NP	20.22	24.42	4.20
	06/04/03	20.39	NP	NP	20.39	24.42	4.03
	09/03/03	19.84	NP	NP	19.84	24.42	4.58
	09/25/03	19.90	NP	NP	19.90	24.42	4.52
	11/14/03	19.80	NP	NP	19.80	24.42	4.62
	12/03/03	19.73	NP	NP	19.73	24.42	4.69
	03/03/04	19.75	NP	NP	19.75	24.42	4.67
	06/03/04	20.88	NP	NP	20.88	24.42	3.54
	09/01/04	20.79	NP	NP	20.79	24.42	3.63
	12/01/04	20.55	NP	NP	20.55	24.42	3.87
	03/02/05	19.91	NP	NP	19.91	24.42	4.51
MW-7	03/06/98	18.42	NP	NP	18.42	20.75	2.33
	06/05/98	19.02	0.03	0.02	19.00	20.75	1.75
	09/04/98	18.58	NP	NP	18.58	20.75	2.17
	12/03/98	19.23	NP	NP	19.23	20.72	1.49
	03/04/99	19.41	0.20	0.15	19.26	20.72	1.46
	06/03/99	19.73	0.41	0.31	19.42	20.72	1.30
	09/30/99	19.47	0.19	0.14	19.33	20.72	1.39
	12/23/99	19.50	NP	NP	19.50	20.72	1.22
	03/22/00	19.40	NP	NP	19.40	20.72	1.32
	06/26/00	19.35	NP	NP	19.35	20.72	1.37
	09/28/00	19.22	NP	NP	19.22	21.72	1.50
	12/28/00	19.51	NP	NP	19.51	20.72	1.21
	03/28/01	19.25	NP	NP	19.25	20.72	1.47
	06/28/01	19.30	NP	NP	19.30	20.72	1.42
	09/27/01	19.14	NP	NP	19.14	20.72	1.58
	12/27/01	19.31	NP	NP	19.31	20.72	1.41
	03/27/02	19.38	NP	NP	19.38	20.72	1.34

TABLE 1

SUMMARY OF STATIC WATER LEVEL ELEVATIONS, 1998 to PRESENT
BP BULK TERMINAL #33T

Well I.D.	Date Measured	Measured DTW (Ft)	Measured LPH Thickness (Ft)	Corrected LPH Thickness (Ft)[1]	Adjusted DTW (Ft)[2]	Top of Casing Elevation (AMSL)	Water Elevation (Ft AMSL)[3]
MW-7 Cont'd	06/26/02	18.38	NP	NP	18.38	20.72	2.34
	09/16/02	18.85	NP	NP	18.85	22.85*	4.00
	12/04/02	18.68	NP	NP	18.68	22.85	4.17
	02/05/03	18.63	NP	NP	18.63	22.85	4.22
	06/04/03	18.83	NP	NP	18.83	22.85	4.02
	09/03/03	18.15	NP	NP	18.15	22.85	4.70
	09/25/03	18.37	NP	NP	18.37	22.85	4.48
	11/14/03	18.40	NP	NP	18.40	22.85	4.45
	12/03/03	18.13	NP	NP	18.13	22.85	4.72
	03/03/04	18.08	NP	NP	18.08	22.85	4.77
	06/03/04	19.30	NP	NP	19.30	22.85	3.55
	09/01/04	19.20	NP	NP	19.20	22.85	3.65
	12/01/04	19.00	NP	NP	19.00	22.85	3.85
	03/02/05	18.31	NP	NP	18.31	22.85	4.54
MW-8	03/06/98	19.35	NP	NP	19.35	21.63	2.28
	06/05/98	19.88	NP	NP	19.88	21.63	1.75
	09/04/98	19.78	NP	NP	19.78	21.63	1.85
	12/03/98	20.19	NP	NP	20.19	21.72	1.53
	03/04/99	19.75	0.01	0.01	19.74	21.72	1.98
	06/03/99	20.25	0.03	0.02	20.23	21.72	1.49
	09/30/99	20.34	0.05	0.04	20.30	21.72	1.42
	12/23/99	20.53	0.05	0.04	20.49	21.72	1.23
	03/22/00	20.35	NP	NP	20.35	21.72	1.37
	06/26/00	20.36	NP	NP	20.36	21.72	1.36
	09/28/00	20.18	NP	NP	20.18	21.72	1.54
	12/28/00	20.45	NP	NP	20.45	21.72	1.27
	03/28/01	20.22	NP	NP	20.22	21.72	1.50
	06/28/01	20.26	NP	NP	20.26	21.72	1.46
	09/27/01	20.12	NP	NP	20.12	21.72	1.60
	12/27/01	20.31	NP	NP	20.31	21.72	1.41
	03/27/02	20.39	NP	NP	20.39	21.72	1.33
	06/26/02	20.28	NP	NP	20.28	21.72	1.44
	09/16/02	19.87	NP	NP	19.87	23.85*	3.98
	12/04/02	19.75	NP	NP	19.75	23.85	4.10
	02/05/03	19.68	NP	NP	19.68	23.85	4.17
	06/04/03	19.87	NP	NP	19.87	23.85	3.98
	09/03/03	19.41	NP	NP	19.41	23.85	4.44
	09/25/03	19.40	NP	NP	19.40	23.85	4.45
	11/14/03	19.52	NP	NP	19.52	23.85	4.33
	12/03/03	19.24	NP	NP	19.24	23.85	4.61
	03/03/04	19.26	NP	NP	19.26	23.85	4.59
	06/03/04	20.31	NP	NP	20.31	23.85	3.54
	09/01/04	20.28	NP	NP	20.28	23.85	3.57
	12/01/04	20.02	NP	NP	20.02	23.85	3.83
	03/02/05	19.31	NP	NP	19.31	23.85	4.54

TABLE 1

SUMMARY OF STATIC WATER LEVEL ELEVATIONS, 1998 to PRESENT
BP BULK TERMINAL #33T

Well I.D.	Date Measured	Measured DTW (Ft)	Measured LPH Thickness (Ft)	Corrected LPH Thickness (Ft)[1]	Adjusted DTW (Ft)[2]	Top of Casing Elevation (AMSL)	Water Elevation (Ft AMSL)[3]
MW-9	03/06/98	19.82	NP	NP	19.82	22.15	2.33
	06/05/98	20.38	NP	NP	20.38	22.15	1.77
	09/04/98	20.37	NP	NP	20.37	22.15	1.78
	12/03/98	20.70	NP	NP	20.70	22.22	1.52
	03/04/99	20.96	NP	NP	20.96	22.22	1.26
	06/03/99	20.87	NP	NP	20.87	22.22	1.35
	09/30/99	20.86	NP	NP	20.86	22.22	1.36
	12/23/99	21.02	NP	NP	21.02	22.22	1.20
	03/22/00	20.88	NP	NP	20.88	22.22	1.34
	06/26/00	20.87	NP	NP	20.87	22.22	1.35
	09/28/00	20.68	NP	NP	20.68	22.22	1.54
	12/28/00	20.96	NP	NP	20.96	22.22	1.26
	03/28/01	20.72	NP	NP	20.72	22.22	1.50
	06/28/01	20.77	NP	NP	20.77	22.22	1.45
	09/27/01	20.64	NP	NP	20.64	22.22	1.58
	12/27/01	20.81	NP	NP	20.81	22.22	1.41
	03/27/02	20.92	NP	NP	20.92	22.22	1.30
	06/26/02	20.81	NP	NP	20.81	22.22	1.41
	09/16/02	20.37	NP	NP	20.37	24.35*	3.98
	12/04/02	20.30	NP	NP	20.30	24.35	4.05
	02/05/03	20.21	NP	NP	20.21	24.35	4.14
	06/04/03	20.32	NP	NP	20.32	24.35	4.03
	09/03/03	19.88	NP	NP	19.88	24.35	4.47
	09/25/03	19.85	NP	NP	19.85	24.35	4.50
	11/14/03	20.30	NP	NP	20.30	24.35	4.05
	12/03/03	19.81	NP	NP	19.81	24.35	4.54
	03/03/04	19.77	NP	NP	19.77	24.35	4.58
	06/03/04	20.83	NP	NP	20.83	24.35	3.52
	09/01/04	20.79	NP	NP	20.79	24.35	3.56
	12/01/04	20.56	NP	NP	20.56	24.35	3.79
	03/02/05	19.83	NP	NP	19.83	24.35	4.52
MW-10	03/28/01	18.47	NP	NP	18.47	20.87	2.40
	06/28/01	18.51	NP	NP	18.51	20.87	2.36
	09/27/01	18.47	NP	NP	18.47	20.87	2.40
	12/27/01	18.47	NP	NP	18.47	20.87	2.40
	03/27/02	17.57	NP	NP	17.57	20.87	3.30
	06/26/02	18.55	NP	NP	18.55	20.87	2.32
	09/16/02	18.56	NP	NP	18.56	23.01*	4.45
	12/04/02	18.62	NP	NP	18.62	23.01	4.39
	02/05/03	18.56	NP	NP	18.56	23.01	4.45
	06/04/03	18.56	NP	NP	18.56	23.01	4.45
	09/03/03	18.46	NP	NP	18.46	23.01	4.55
	09/25/03	18.50	NP	NP	18.50	23.01	4.51
	11/14/03	18.53	NP	NP	18.53	23.01	4.48
	12/03/03	18.45	NP	NP	18.45	23.01	4.56
	03/03/04	18.35	NP	NP	18.35	23.01	4.66
	06/03/04	18.56	NP	NP	18.56	23.01	4.45
	09/01/04	18.51	NP	NP	18.51	23.01	4.50

TABLE 1

SUMMARY OF STATIC WATER LEVEL ELEVATIONS, 1998 to PRESENT
BP BULK TERMINAL #33T

Well I.D.	Date Measured	Measured DTW (Ft)	Measured LPH Thickness (Ft)	Corrected LPH Thickness (Ft)[1]	Adjusted DTW (Ft)[2]	Top of Casing Elevation (AMSL)	Water Elevation (Ft AMSL)[3]
MW-10	12/01/04	18.56	NP	NP	18.56	23.01	4.45
Cont'd	03/02/05	18.47	NP	NP	18.47	23.01	4.54
MW-11	03/06/98	18.48	NP	NP	18.48	20.68	2.20
	06/05/98	19.07	0.02	0.05	19.05	20.68	1.63
	09/04/98	18.86	NP	NP	18.86	20.68	1.82
	12/03/98	19.30	0.05	0.04	19.26	20.76	1.50
	03/04/99	19.49	0.03	0.02	19.47	20.76	1.29
	06/03/99	19.34	0.08	0.06	19.28	20.76	1.48
	09/30/99	19.54	0.22	0.17	19.37	20.76	1.39
	12/23/99	19.78	0.26	0.20	19.58	20.76	1.18
	03/22/00	19.62	0.23	0.17	19.45	20.76	1.31
	06/26/00	19.47	0.08	0.06	19.41	20.76	1.35
	09/28/00	19.26	0.01	0.01	19.25	20.76	1.51
	12/28/00	19.57	NP	NP	19.57	20.76	1.19
	03/28/01	19.30	NP	NP	19.30	20.76	1.46
	06/28/01	19.34	NP	NP	19.34	20.76	1.42
	09/27/01	19.17	NP	NP	19.17	20.76	1.59
	12/27/01	19.34	NP	NP	19.34	20.76	1.42
	03/27/02	19.43	NP	NP	19.43	20.76	1.33
	06/26/02	19.19	NP	NP	19.19	20.76	1.57
	09/16/02	18.86	NP	NP	18.86	22.59*	4.03
	12/04/02	19.35	NP	NP	19.35	22.59	3.24
	02/05/03	18.68	NP	NP	18.68	22.89	4.21
	06/04/03	18.89	NP	NP	18.89	22.89	4.00
	09/03/03	18.10	NP	NP	18.10	22.89	4.79
	09/25/03	18.14	NP	NP	18.14	22.89	4.75
	11/14/03	18.37	NP	NP	18.37	22.89	4.52
	12/03/03	18.26	NP	NP	18.26	22.89	4.63
	03/03/04	18.15	NP	NP	18.15	22.89	4.74
	06/03/04	19.36	NP	NP	19.36	22.89	3.53
	09/01/04	19.32	NP	NP	19.32	22.89	3.57
	12/01/04	19.11	NP	NP	19.11	22.89	3.78
	03/02/05	18.43	NP	NP	18.43	22.89	4.46
MW-12	03/06/98	18.49	NP	NP	18.49	20.88	2.39
	06/05/98	19.13	0.04	0.03	19.10	20.88	1.78
	09/04/98	19.04	0.06	0.05	18.99	20.88	1.89
	12/03/98	19.43	0.14	0.11	19.32	20.84	1.52
	03/04/99	19.57	0.06	0.05	19.52	20.84	1.32
	06/03/99	19.57	0.58	0.44	19.13	20.84	1.71
	09/30/99	19.78	0.43	0.32	19.46	20.84	1.38
	12/23/99	19.13	0.60	0.45	18.68	20.84	2.16
	03/22/00	20.11	0.76	0.57	19.54	20.84	1.30
	06/26/00	19.66	0.24	0.18	19.48	20.84	1.36
	09/28/00	19.38	0.09	0.07	19.31	20.84	1.53
	12/28/00	19.90	0.34	0.26	19.64	22.97*	3.99